

REMARKS

Claims 1-10 are pending in this application. By this Amendment, Applicant amends claims 1-3 and adds claim 10.

The Drawings were objected to because Figs. 10-14 were not designated as --PRIOR ART--. Applicants have amended Figs. 10-14 to be properly designated as --PRIOR ART-- in the accompanying Request for Approval of Drawing Corrections. Accordingly, Applicant respectfully requests reconsideration and withdrawal of this objection.

Claims 1-9 were rejected under 35 U.S.C. § 112, second paragraph, for allegedly being indefinite. With respect to the use of the term "about" in the claims, the Examiner alleged that "the term 'about' is a relative term, and concluded that the claims are therefore indefinite." However, it has long been held that the term "about" does **NOT** render a claim indefinite. The term is clear and flexible, and permits some tolerance. Ex parte Eastwood Brindle Knob, 163 USPQ 316 (PO Bd. App); In re Ayers, 145 USPQ 207 (CCPA 1965). The term "substantially" does not render a claim indefinite under the second paragraph of 35 U.S.C. § 112. In re Mathison & Swanson, 184 USPQ 484 (CCPA 1973). Additionally, Applicant has amended claims 1-3 to correct the remaining informalities noted by the Examiner. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claims 1-9 under 35 U.S.C. § 112, second paragraph.

Claims 1-4, 7 and 9 were rejected under 35 U.S.C. § 102(e) as being anticipated by Meadors et al. (U.S. 6,249,205). In addition, claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Meadors et al. in view of Folker et al. (U.S. 5,777,539). And claims 6 and 8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Meadors et al. in view of Gu et al. (U.S. 5,499,005). Applicant respectfully traverses these rejections.

Claim 1 recites:

"A multilayer inductor comprising:
a plurality of magnetic layers stacked on each other;
through-holes formed in the stacked magnetic layers; and
a plurality of coil conductor patterns disposed between the plurality

of magnetic layers and spirally connected to each other via the through-holes;

wherein the area of a projected plane of a circuit of each coil conductor pattern on a main surface of respective ones of the plurality of magnetic layers is in a range from about 35% to about 75% of the area of the main surface of the respective ones of the plurality of magnetic layers." (Emphasis added)

In conventional multilayer inductors, the area of the coil conductor patterns provided on each of the magnetic layers is about 30% or less of the area of the main surface of the magnetic layers, and the width of the coil conductor patterns is about 0.2 to about 0.3 mm. The area and width of the coil conductor patterns have conventionally been limited to the above-identified values because of the following problems:

1. Delamination and cracking often occur when the area and width of the coil conductor patterns is increased because of the difference in sintering shrinkage of the coil conductor patterns and the magnetic layers;
2. A self-resonant point of the multilayer inductor deteriorates because of stray capacitance between the coil conductor patterns; and
3. An inductance value of the multilayer inductor deteriorates because the magnetic flux is shielded.

However, the unique combination and arrangement of the elements of the present claimed invention make it possible to increase the area and width of the coil conductor patterns to a range of about 35% to about 75% and at least about 0.7 mm, respectively, without experiencing the problems of the conventional multilayer inductors described above. The increased area and width of the coil conductor patterns greatly reduce the DC resistance of the present claimed multilayer inductor, and thus, greatly increase direct currents applied to the multilayer inductor according to the present claimed invention.

The Examiner alleged that Meadors et al. teaches a multilayer inductor including all of the features recited in claim 1 of the present application, including "the area of a projected plane of a circuit of each coil conductor pattern on a main surface of the magnetic layers is in a range of from about 35% to about 75% of the area of the main

surface of the respective ones of the plurality of magnetic layers." Applicants respectfully disagree.

Contrary to the Examiner's allegations, Meadors et al. fails to teach or suggest any specific values for the area of each coil conductor pattern with respect to the respective magnetic layer, and certainly fails to teach or suggest "the area of a projected plane of a circuit of each coil conductor pattern on a main surface of respective ones of the plurality of magnetic layers is in a range from about 35% to about 75% of the area of the main surface of the respective ones of the plurality of magnetic layers" as recited in the present claimed invention.

Prior art rejections must be based on evidence. Graham v. John Deere Co., 383 U.S. 117 (1966). Pursuant to MPEP 706.02(a), the Examiner is hereby requested to cite a reference in support of his position that it was well known at the time of Applicant's invention to provide coil conductor patterns such that "the area of a projected plane of a circuit of each coil conductor pattern on a main surface of respective ones of the plurality of magnetic layers is in a range from about 35% to about 75% of the area of the main surface of the respective ones of the plurality of magnetic layers" as recited in claim 1 of the present application. If the rejection is based on facts within the personal knowledge of the Examiner, the data should be supported as specifically as possible and the rejection must be supported by an affidavit from the Examiner, which would be subject to contradiction or explanation by affidavit of Applicants or other persons. See 37 C.F.R. §1.107(b).

Accordingly, Applicant respectfully submits that Meadors et al. clearly fails to teach or suggest each and every feature, as required by 35 U.S.C. § 102. Furthermore, Applicant respectfully submits that it would not have been obvious to modify Meadors et al. to include the feature "the area of a projected plane of a circuit of each coil conductor pattern on a main surface of respective ones of the plurality of magnetic layers is in a range from about 35% to about 75% of the area of the main surface of the respective ones of the plurality of magnetic layers" as recited in claim 1 of the present application.

Accordingly, Applicants respectfully submit that Meadors et al. fails to teach or suggest the unique combination and arrangement of elements recited in claim 1 of the

present application.

Folker et al. is relied upon merely to teach substantially disk-shaped layers, and certainly fails to teach or suggest "the area of a projected plane of a circuit of each coil conductor pattern on a main surface of respective ones of the plurality of magnetic layers is in a range from about 35% to about 75% of the area of the main surface of the respective ones of the plurality of magnetic layers" as recited in claim 1 of the present application.

Gu et al. is relied upon merely to teach the use of C-shape or ring-shape coil conductor patterns, and certainly fails to teach or suggest "the area of a projected plane of a circuit of each coil conductor pattern on a main surface of respective ones of the plurality of magnetic layers is in a range from about 35% to about 75% of the area of the main surface of the respective ones of the plurality of magnetic layers" as recited in claim 1 of the present application.

Accordingly, Applicant respectfully submits that Folker et al. and Gu et al., taken individually or in combination, fail to cure the deficiencies of Meadors et al. described above.

In view of the foregoing amendments and remarks, Applicants respectfully submit that claim 1 is allowable. Claims 2-10 depend upon claim 1, and are therefore allowable for at least the reasons that claim 1 is allowable.

In view of the foregoing Amendments and Remarks, Applicant respectfully submits that this Application is in condition for allowance. Favorable consideration and prompt allowance are respectfully solicited.

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The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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Attorneys for Applicant

Joseph R. Keating
Registration No. 37,368

Christopher A. Bennett
Registration No. 40,710

KEATING & BENNETT LLP
10400 Eaton Place, Suite 312
Fairfax, VA 22030
Telephone: (703) 385-5200
Facsimile: (703) 385-5080

VERSION WITH MARKINGS SHOWING CHANGES MADE

1. A multilayer inductor comprising:
a plurality of [stacked] magnetic layers stacked on each other;
through-holes formed in the stacked magnetic layers; and
a plurality of coil conductor patterns disposed between the plurality of magnetic layers and spirally connected to each other via the through-holes;
wherein the area of a projected plane of a circuit of each coil conductor pattern on a main surface of respective ones of the plurality of magnetic layers is in a range from about 35% to about 75% of the area of the main surface of the respective ones of the plurality of magnetic layers.
2. A multilayer inductor according to Claim 1, further comprising at least one nonmagnetic element disposed in the vicinity of the plurality of coil conductor patterns in the plurality of magnetic layers.
3. A multilayer inductor according to Claim 1, further comprising external electrodes provided on [the] ends of the multilayer inductor.